

## Abstract

[0054] Two problems arise when measuring length at the eye by short-coherence interferometry. First, the measurement focus and coherence window usually do not coincide. Second, the scanning process along the eye axis is time-consuming. Both result in poor signal quality and inaccurate measurements. The present application is directed to a short-coherence interferometer in which a right-angle mirror and focusing optics jointly carry out a periodic back-and-forth movement in such a way that the measurement beam focus which is generated by the focusing optics and imaged on the eye by relay optics is moved synchronously with the coherence window from the cornea along the optic axis of the eye to the fovea centralis. Further, different path lengths are generated in the measurement beam path and reference beam path by means of a plurality of reflectors, so that the scanning process is limited to distances which are smaller than the optical length of the eye. The present invention is advantageously implemented using on a fiber-optic interferometer. According to the invention, the reference interferometer arm and measurement interferometer arm are combined with the arms of a fiber-optic interferometer.